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Bacidia, Micarea, Sagedia, and *Stigmidium* species new to Turkey

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Abstract—During lichenological exploration in Turkey, two lichenised fungi (*Micarea micrococca, Sagedia zonata*) and one lichenicolous fungus (*Stigmidium microspilum*) were established as new records for Asia, and one lichenised fungus (*Bacidia chloroticula*) as new for Turkey. Illustrations are accompanied by brief descriptions and comments on habitat, substrate, and geographical distribution.

Key words—biodiversity, *Corylus*, Giresun, İstanbul, Trabzon

Introduction

Studies on the lichen biodiversity of Turkey are as yet incomplete, but many new lichenized and lichenicolous fungi records for Turkey have been found in recent years (Kınalıoğlu & Aptroot 2010, Kocakaya et al. 2011, Karagöz & Aslan 2012, Aslan & Yazıcı 2013, Halıcı 2015, Yazıcı & Aptroot 2015, Şenkardeşler et al. 2016). Despite the increase in the number of lichen records, additional studies are needed in some places where data on lichen biodiversity are still scarce. The objective of this paper is to add new species to the list of lichens known from Turkey.

Materials & methods

The study is based on lichen material collected in three different Turkish provinces (Giresun, İstanbul, Trabzon). Vouchers are preserved in the herbarium of the Biology Department, Faculty of Science and Arts, Giresun University, Giresun, Turkey (GUB).

Morphological, anatomical, and chemical features of the lichen thalli were examined with a stereomicroscope, a light microscope and the standard chemical spot tests (e.g. 10% potassium hydroxide).

Species recorded

Bacidia chloroticula (Nyl.) A.L. Sm., Monogr. Brit. Lich. 2: 155. 1911. Fig. 1

Thallus thin, grey–pale green. Photobiont cells 5–12.5 µm diam. Apothecia small, flat, 0.07–0.3 mm diam., pinkish to pale brown. Hymenium colourless, 32.5–40 µm tall, epihymenium and hypothecium colourless. Ascospores 1–4-celled, 20–35 × 1–1.6 µm, acicular. Thallus C–, K–, KC–, PD–.

Specimen examined: **TURKEY.** İStanbul, **Maltepe,** in the vicinity of Başıbüyük, 40°57′32″N 29°09′27″E, 235 m, on siliceous rocks, 24 April 2007, Kınalıoğlu (GUB 2383).

Remarks—For a detailed description of the species see Smith et al. (2009).

Bacidia *chloroticula* is a pioneer species. It grows on various shaded, often man-made substrata, such as tree bases and exposed roots, dead grasses, tops of cut stumps and fence posts, cement and brick rubble, and even painted

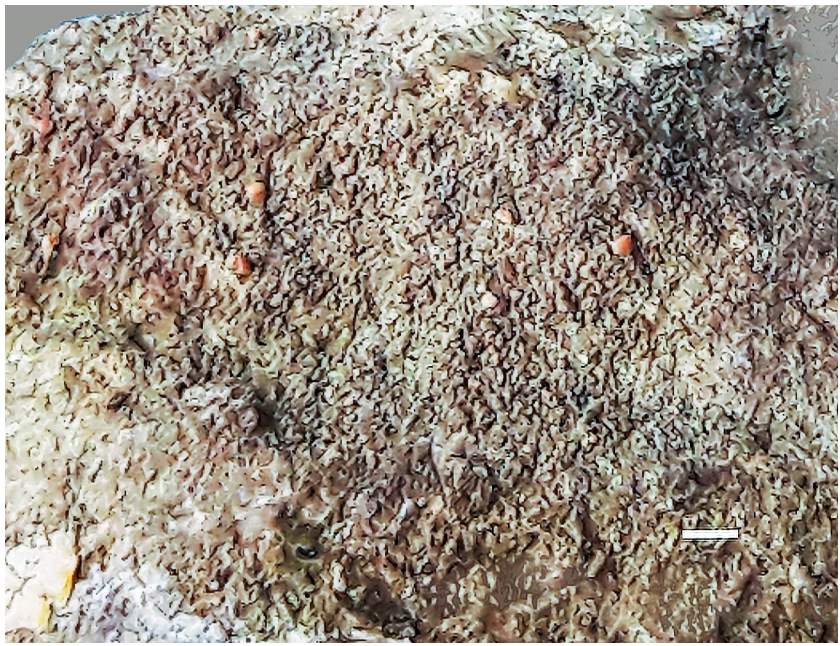

Fig. 1. *Bacidia chloroticula* (GUB 2383): habit. Scale bar = 1 mm.

iron-work and tarmacadam (Smith et al. 2009). In Turkey, we have recorded it only once, from siliceous rocks at low elevation.

Known previously from Asia, Europe, and North America (Smith et al. 2009). New to Turkey.

Bacidia chloroticula is most easily confused with Bacidina saxenii (Erichsen) M. Hauck & V. Wirth, which has a very similar ecology. It differs in having often darker, pale to dark-brown apothecia with pale brown hymenium and larger, vesicle-like, 20 × 12 mm large cells in the outer exciple (Smith et al. 2009). In *B. chloroticula* the cells in the exciple do not exceed 5(–7) µm in width (Smith et al. 2009). The size of the apothecia and hymenium in the Turkish collection is almost the same as given by Smith et al. (2009; apothecia 0.08–0.2 mm. diam., hymenium 40–42 µm). However, the ascospores in the Turkish material are slightly smaller than those reported by Smith et al. (2009; 30–50 × 2–3µm).

Micarea micrococca (Körb.) Gams ex Coppins,
Checkl. Lich. Gr. Brit. Ire.: 86. 2002. Fig. 2

Thallus crustose, greenish. Apothecia convex to subglobose, immarginate, mostly tuberculate, 0.1–0.3 mm diam., to 0.5 mm diam. when tuberculate, pinkish to flesh or rarely pale brownish. Epihymenium colourless, K–, hymenium 32.5–45 µm tall, colourless. Asci clavate, 8-spored. Ascospores ellipsoid to oblong, hyaline, 1-celled, 7.5–10 × 2.5–3 µm. Thallus and apothecia C–, K–, KC–, PD–.

Specimen examined: **TURKEY. Giresun: Espiye,** Çepniköy, 40°51′38″N 38°43′57″E, 493 m, on garden fence, 5 October 2013, Kınalıoğlu (GUB 2384).

Remarks—For detailed descriptions of the species see Smith et al. (2009) and Barton & Lendemer (2014).

Micarea micrococca, the most common representative of the *M. prasina* group, is found on acid bark of trees and stumps, shrubs, plant debris (usually in conifer plantations), soil or debris in rock crevices in coastal sites, rarely on shaded sandstone rocks, mostly in shaded sites or niches, even close to large city centres (Smith et al. 2009). In Turkey, *Micarea micrococca* was collected on a garden fence next to a shady hazelnut field.

Known previously from Australia, Europe, and North America (Smith et al. 2009). New to Asia.

Micarea micrococca is extremely variable. It is very similar to *M. prasina* Fr. and can sometimes only be separated by using TLC. The apothecia are the clearest morphological character differentiating *M. micrococca* from

Fig. 2. *Micarea micrococca* (GUB 2384): habit. Scale bar = 1 mm.

M. prasina, which has whitish, smaller apothecia (≤0.2 mm diam.; Smith et al. 2009, Dobson 2011).

The ascospores and hymenium in the Turkish specimen are smaller than those cited by Barton & Lendemer (2014; ascospores 7.4–10.9 × 2.3–3.6 µm, hymenium 40–60 µm) and Smith et al. (2009; ascospores 6–17 × 2–4.5 µm, hymenium 30–50 µm). The Turkish collection differs from North American samples by the K– reaction.

Sagedia zonata Ach., Kongl. Vetensk. Acad. Nya Handl. 30: 165. 1809. Fig. 3

Thallus crustose, saxicolous, greyish or very slightly bluish, irregularly cracked-areolate, areoles to 1.5 mm wide. Apothecia black, 0.25–1 mm diam., numerous, immersed or somewhat raised, with a prominent black rim. Hymenium 80–95 µm tall, colourless. Asci 8-spored. Ascospores simple, mostly subglobose, broadly ellipsoid or very rarely ellipsoid, 13.5–20 × 7.5–11 µm. Thallus C–, K–, KC–, PD–.

Specimen examined: **TURKEY**. Trabzon: **Araklı,** S of Kızılkaya Yaylası, 40°39′56″N 40°01′49″E, 2300 m, on siliceous rocks, 17 August 2005, Kınalıoğlu (GUB 2385).

Remarks—For a detailed description of the species see Wirth et al. (2013).

This boreal-temperate species grows on non-calcareous blocks, rocks, and boulders in slightly shady to mostly well-lit areas, but also on periodically or

Fig. 3. *Sagedia zonata* (GUB 2385): habit. Scale bar = 1 mm.

rarely inundated surfaces next to streams in montane to subalpine zones (Wirth et al. 2013). In Turkey, we collected it from siliceous rocks in an exposed area.

Known previously from Europe (Wirth et al. 2013). New to Asia.

The Turkish material of *Sagedia zonata* differs from European specimens by having bigger areoles and a lower hymenium. In the European collections the areole is 0.5–1 mm diam., and the hymenium is 85–100 µm high (Wirth et al. 2013). Otherwise the Turkish collection matches the sizes given by Wirth et al. (2013; apothecia 0.2–1 mm diam., ascospores 14–19 × 8–12 µm).

Stigmidium microspilum (Körb.) D. Hawksw., Kew Bull. 30(1): 201.1975. Fig. 4

Thallus dark brownish circular patches, patches ≤0.5–1.5 mm wide, regularly scattered on the thallus surface of the host (*Graphis scripta* (L.) Ach.). Perithecia small, black, 0.1–0.12 mm diam. Ascospores hyaline, elongate or narrowly ellipsoid, 2-celled, 14–18.8 × 2.5–3.8 µm. Thallus C–, K–, KC–, PD–.

Fig. 4. *Stigmidium microspilum* (GUB 2386): habit. Scale bar = 1 mm.

Specimen examined: **TURKEY. Giresun**: **Espiye,** N of Yeniköy village, 40°4′42″N 38°45′31″E, 781 m, on the thallus of *Graphis scripta* on *Corylus* sp., 6 October 2013, Kınalıoğlu (GUB 2386).

Remarks—For a detailed description of *S. microspilum*, see Hawksworth (1983).

This widespread lichenicolous species occurs on thalli of *Graphis scripta* on *Corylus* sp. in old woodlands (Hawksworth 1983). In Turkey it was growing on a *Graphis scripta* thallus in a damp hazelnut garden.

Known previously from Europe (Hawksworth 1983). New to Asia.

The Turkish material of *Stigmidium microspilum* has slightly longer and narrower ascospores than those described from European material (Hawksworth 1983; ascospores 14–15 × 3–5 μm).

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Literature cited

Aslan A, Yazıcı K. 2013. New *Lecanora*, *Lecidea, Melaspilea*, *Placynthium,* and *Verrucaria* records for Turkey and Asia. Mycotaxon 123: 321–326. http://dx.doi.org/10.5248/123.321

Barton J, Lendemer JC. 2014. *Micarea micrococca* and *M. prasina*, the first assessment of two very similar species in eastern North America. Bryologist 117(3): 223–231. http://dx.doi.org/10.1639/0007-2745-117.3.223

Dobson FS. 2011. Lichens: an illustrated guide to the British and Iris species. Richmond Publishing, Slough. 496 p.

Halıcı MG. 2015. New records of crustose *Teloschistaceae* and lichenicolous fungi from Turkey. Mycotaxon 130(3): 769–773. http://dx.doi.org/10.5248/130.769

Hawksworth DL. 1983. A key to the lichen-forming, parasitic, parasymbiotic and saprophytic fungi occurring on lichens in the British Isles. Lichenologist 15(1): 1–44. http://dx.doi.org/10.1017/S0024282983000031

Karagöz Y, Aslan A. 2012. Floristic lichen records from Kemaliye District (Erzincan) and Van Province. Turkish Journal of Botany 36: 558–565. http://dx.doi.org/10.3906/bot-1101-30

Kınalıoğlu K, Aptroot A. 2010 *Catillaria, Cladonia, Strigula,* and *Cresporhaphis* species new to Turkey and Asia, Mycotaxon 114: 329–332. http://dx.doi.org/10.5248/114.329

Kocakaya M, Halıcı MG, Aksoy A. 2011. *Zwackhiomyces turcicus* sp. nov. (*Ascomycota*, *Xanthopyreniaceae*) from Turkey. Mycotaxon 116: 329–333. http://dx.doi.org/10.5248/116.329

Şenkardeşler A, Cansaran Duman D, Lökös L, Ahti T. 2016. *Cladonia trapezuntica* (*Cladoniaceae*, lichenized *Ascomycota*): a robust morphotype of *Pycnothelia papillaria*, a taxonomic study with conservational survey. Turkish Journal of Botany 40: 104–111. http://dx.doi.org/10.3906/bot-1403-49

Smith CW, Aptroot A, Coppins BJ, Fletcher A, Gilbert OL, James PW, Wolseley PA. 2009. The lichens of Great Britain and Ireland. British Lichen Society, London, 1046 p.

Wirth V, Hauck M, Schultz M. 2013. Die Flechten Deutschlands (2 volumes). E. Ulmer, Stuttgart. 1244 p.

Yazıcı K, Aptroot A. 2015. *Buellia, Lempholemma,* and *Thelidium* species new for Turkey and Asia. Mycotaxon 130(3): 701–706. http://dx.doi.org/10.5248/130.701